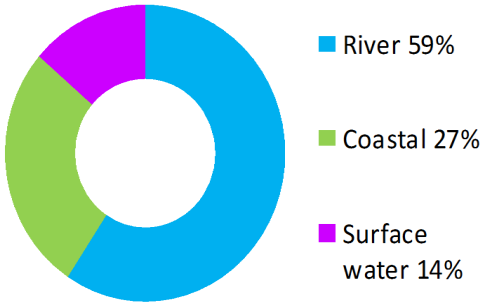
Ballachulish and Glencoe (Potentially Vulnerable Area 01/28)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	Appin coastal

Summary of flooding impacts



At risk of flooding

- 50 residential properties
- 20 non-residential properties
- £180,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	*Maintain flood warning*	Awareness raising	*Surface water plan/study*	Emergency plans/response
Maintain flood protection scheme	*Strategic mapping and modelling*	Flood forecasting	Self help	Maintenance	Planning policies

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Highland and Argyll	The Highland Council	Appin coastal

Background

This Potentially Vulnerable Area is located on the south of Loch Leven and covers Ballachulish and Glencoe (shown below). It is approximately 16km^2. The A82 passes through the area.

The River Laroch which flows through Ballachulish into Loch Leven is the largest river in the area.

There are approximately 50 residential and 20 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £180,000 with the majority caused by river flooding.

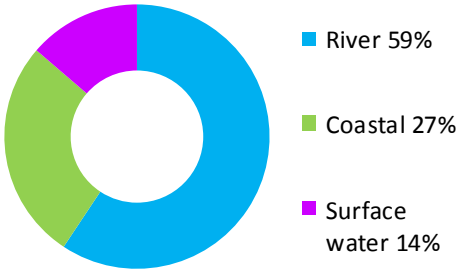


Figure 1: Annual Average Damages by flood source

Summary flooding of impacts

Coastal flood risk affects the frontage in Glencoe from the camp site at Invercoe south towards the pier. River flood risk is predominantly from the River Laroch in Ballachulish.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads affected by flooding include the A82 and B863. A school, the police station and small areas of the designated environmental site at Glen Etive and Glen Fyne, which is a Special Area of Conservation, are also at risk. One designated cultural heritage site is at risk of flooding.

The damages associated with floods of different likelihood are shown in Figure 2. Residential and non-residential properties experience the greatest economic impact.

The location of the impacts of flooding is shown in Figure 3.

	1 in 10	1 in 200	1 in 1000
	High likelihood	Medium likelihood	Low likelihood
Residential properties (total 320)	10	50	60
Non-residential properties (total 70)	<10	20	20
People	20	110	130
Community facilities	0	<10 Includes: educational buildings and emergency services	<10 Includes: educational buildings and emergency services
Utilities assets	<10	<10	<10
Transport links (excluding minor roads)	Roads at 20 locations	Roads at 30 locations	Roads at 30 locations
Environmental designated areas (km^2)	0.1	0.1	0.1
Designated cultural heritage sites	1	1	2
Agricultural land (km^2)	0.2	0.3	0.3

Table 1: Summary of flooding impacts[1]

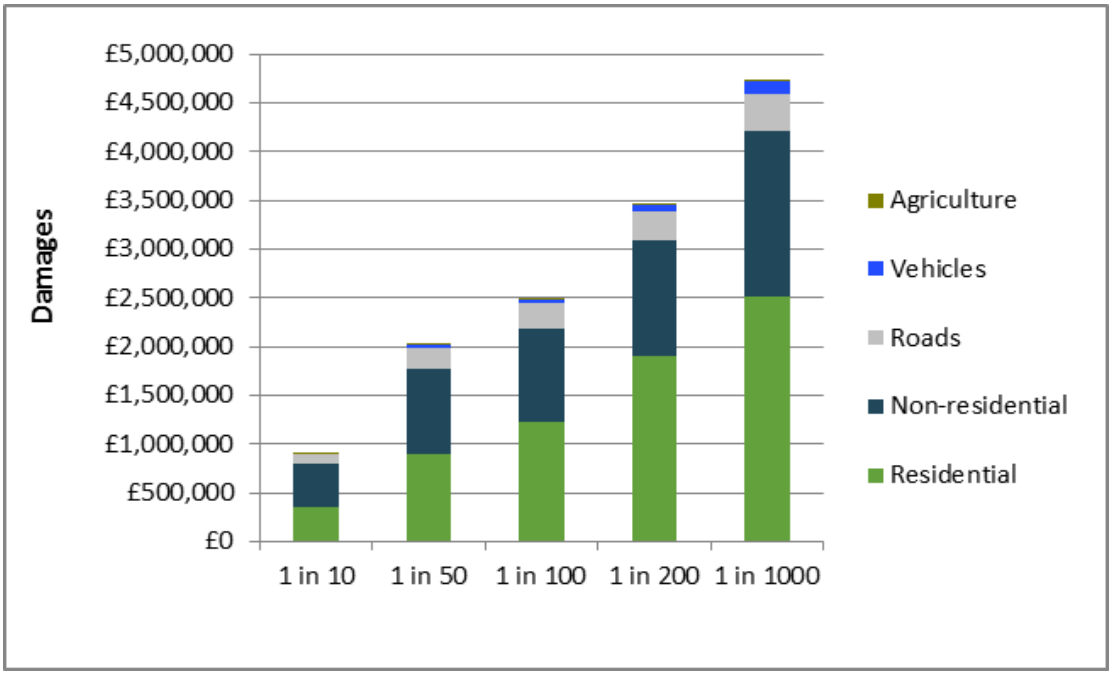


Figure 2: Damages by flood likelihood

History of flooding

The earliest recorded flood was in 1869 and was caused by a particularly high tide in Loch Leven. Floods were reported in 2002, 2006 and in 2008 when the police station flooded.

[1] Some receptors are counted more than once if flooded from multiple sources

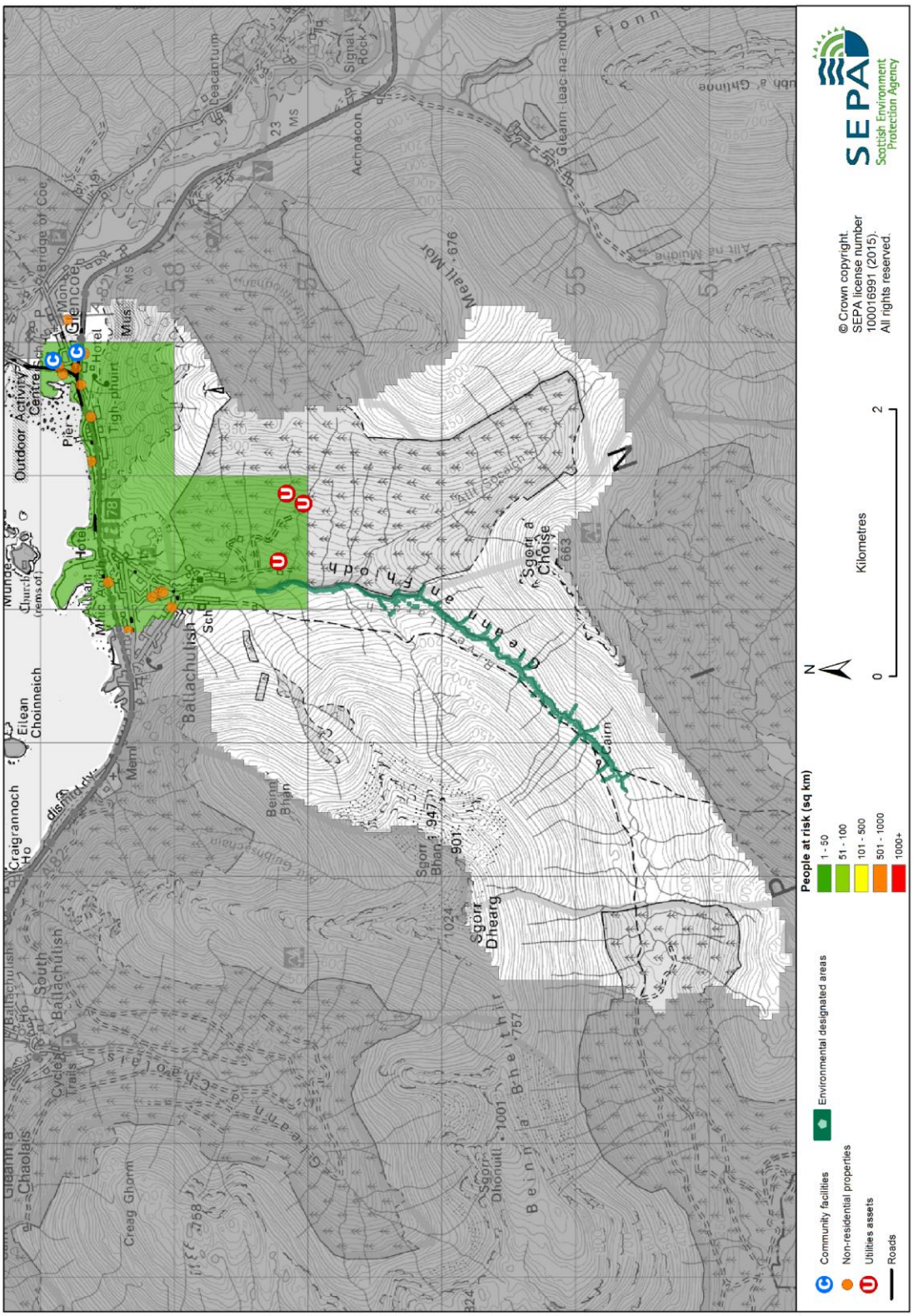


Figure 3: Impacts of flooding

Objectives to manage flooding in Potentially Vulnerable Area 01/28

Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Ballachulish and Glencoe Potentially Vulnerable Area.

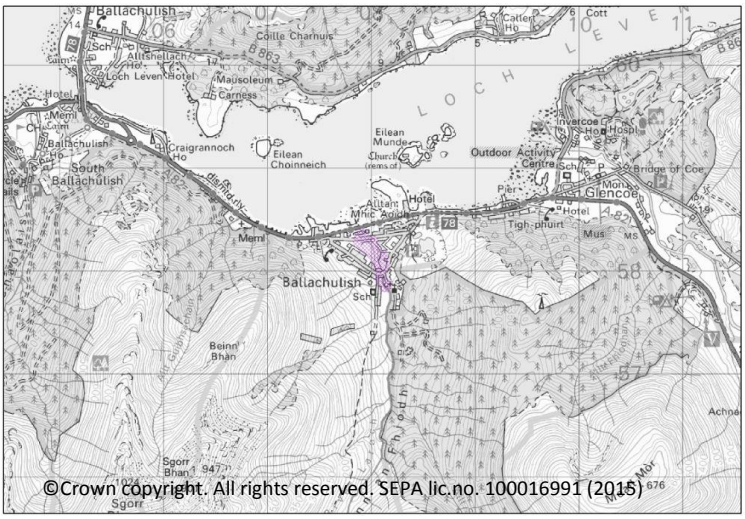
Reduce flood risk in Ballachulish from the River Laroch

Indicators:

- 40 people
- £31,000 Annual Average Damages from residential properties
- £58,000 Annual Average Damages from non-residential properties

Objective ID: 102801

Target area:



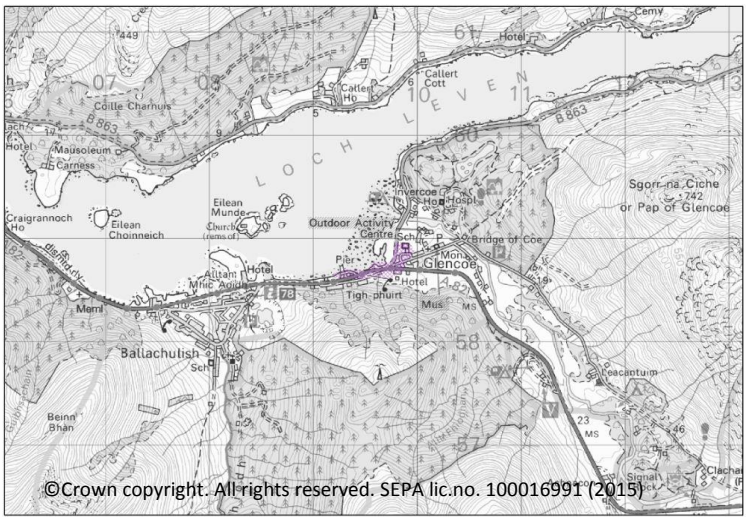
Reduce flood risk in Glencoe from Loch Leven

Indicators:

- 40 people
- 1 educational building

Objective ID: 102802

Target area:



Target area	Objective	ID	Indicators within PVA
Ballachulish and Glencoe	Reduce the physical or disruption risk related to the transport network for roads	1309	• 80m of the A82 in 1 location
Applies across Highland and Argyll Local Plan District	Avoid an overall increase in flood risk	100001	• 50 residential properties • £180,000 Annual Average Damages
Applies across Highland and Argyll Local Plan District	Reduce overall flood risk	100002	• 50 residential properties • £180,000 Annual Average Damages
Applies across Highland and Argyll Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

Actions to manage flooding in Potentially Vulnerable Area 01/28

Actions describe where and how flood risk will be managed. These actions have been set by SEPA and agreed with flood risk management authorities following consultation. Selection of actions to deliver the agreed objectives was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Ballachulish and Glencoe Potentially Vulnerable Area.

Selected actions					
Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	*Maintain flood warning*	Awareness raising	*Surface water plan/study*	Emergency plans/response
Maintain flood protection scheme	*Strategic mapping and modelling*	Flood forecasting	Self help	Maintenance	Planning policies

Action (ID):	**FLOOD PROTECTION SCHEME/WORKS** (1309021)		
Objective (ID):	Reduce the physical or disruption risk related to the transport network for roads (1309)		
Delivery lead:	Transport Scotland		
Status:	**Under development**	Indicative delivery:	**2016-2021**
Description:	Transport Scotland will carry out civil engineering work which will reduce flood risk to identified sections of the A82.		

Action (ID):	**FLOOD PROTECTION STUDY** (1028010005)		
Objective (ID):	Reduce flood risk in Ballachulish from the River Laroch (102801)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	104 of 168	**9 of 23**	
Status:	**Not started**	Indicative delivery:	**2022-2027**
Description:	A study is recommended to further investigate the feasibility of a flood protection scheme for Ballachulish, focusing on direct defences and channel modifications between Laroch Beag and Albert Road, and consideration of property level protection. Natural flood management, in particular sediment management, in the River Laroch to reduce bank erosion and any other actions may also be considered in order to develop the most sustainable range of options.		

	The study should look to confirm the length and size of works needed and the business case for flood protection works. The study will be carried out in cycle 2 as there is no known history of significant flooding in Ballachullish from the River Laroch.
Potential impacts	
Economic:	The business case for flood protection works will need to be developed further as part of the study to fully justify flood protection works. The study could benefit 17 residential and five non-residential properties at risk of flooding in this location, with potential damages avoided of up to £2.8 million.
Social:	Approximately 37 people may directly benefit from flood protection works. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. Roads, including the A82, may benefit from reduced flood risk, which could reduce disruption to the wider community. There are potential visual and access impacts for the community, reducing their connection to the watercourse. Natural flood management actions can restore and enhance natural environments and create opportunities for recreation and tourism. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Natural flood management actions can have a positive impact by restoring and enhancing natural habitats. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for impacts on habitats and changes to channel morphology. To be in accord with the FRM Strategy, the responsible authority should seek to ensure as part of the study that the action will not have an adverse effect on the integrity of the Glen Etive and Glen Fyne Special Protection Area.

Action (ID):	**FLOOD PROTECTION STUDY** (1028020005)		
Objective (ID):	Reduce flood risk in Glencoe from Loch Leven (102802)		
Delivery lead:	The Highland Council		
Priority:	National:	Within local authority:	
	127 of 168	**14 of 23**	
Status:	**Not started**	Indicative delivery:	**2022-2027**
Description:	A study is recommended to further investigate the feasibility of a flood protection scheme for Glencoe. The focus should be on direct defences, coastal revetments and consideration of property level protection for residual risk. Other actions may also be considered to develop the most sustainable range of options. The study should look to confirm the length and size of defences needed and the business case for flood protection works.		
Potential impacts			
Economic:	The business case for flood protection works will need to be developed further as part of the study to fully justify flood protection works. The study could benefit 20 residential and five non-residential		

Economic:	properties at risk of flooding in this location, with potential damages avoided of up to £1.2 million.
Social:	Approximately 44 people and the school in Glencoe may directly benefit from flood protection works. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people. There are potential visual and access impacts for the community, reducing their connection to the watercourse. Negative impacts through disturbance to the local community during the construction phase should be considered.
Environmental:	Flood protection studies should consider the positive and negative impacts of proposed actions on the ecological quality of the environment. Opportunities to mitigate any environmental impacts may include design and timing of works. There is potential for negative impacts on coastal habitats through increased erosion and disruption of natural processes, and impacts on landscape through disruption of views of the loch and foreshore.

Action (ID):	**FLOOD FORECASTING** (1000020009)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Skye and Lochaber' flood alert area.		

Action (ID):	**SELF HELP** (1000020011)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (1000020013)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact. From 2016 SEPA will engage with the community through local participation in national initiatives, including partnership working with Neighbourhood Watch Scotland. In addition, SEPA will engage with local authorities and community resilience groups where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

Action (ID):	**MAINTENANCE** (1000020007)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.		

Action (ID):	**EMERGENCY PLANS/RESPONSE** (1000020014)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations.		

Action (ID):	**PLANNING POLICIES** (1000010001)		
Objective (ID):	Avoid an overall increase in flood risk (100001) Reduce overall flood risk (100002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		